IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
(Case No. 04-870)

In the Application of:	)	
	)	
Peter Clives Bridges, et al.	)	Examiner: C.T. Ostrup
	)	
Serial No. 10/511,766	)	
	)	Group Art Unit: 3771
Filed: October 19, 2004	)	
	)	Conf. No. 6029
Title: Respirator Assembly	)	

Mail Stop Appeal Brief - Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

APPEAL BRIEF

Dear Sir:

This Appeal Brief is submitted in accordance with the requirements of 37 CFR 41.37. The fee required by 37 CFR 41.20(b)(2) is submitted herewith.

I. REAL PARTY IN INTEREST

The real party in interest of this pending application is QINETIQ LIMITED, which is the owner by Assignment of the above-identified U.S. patent application.

II. RELATED APPEALS AND INTERFERENCES

There are no Appeals or Interferences related to the above-identified U.S. Patent Application.

III. STATUS OF THE CLAIMS

This application contains 7 claims. Claims 1-7 remain pending in the application, stand finally rejected, and are the subject of this appeal.

A copy of claims 1-7, involved in this appeal, is attached hereto in the Claims Appendix.

IV. STATUS OF AMENDMENTS

There are no amendments outstanding.

V. SUMMARY OF THE CLAIMED SUBJECT MATTER

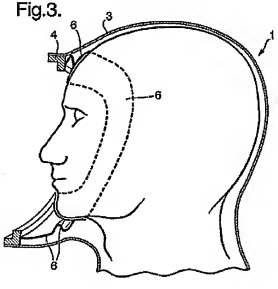
The claimed invention is directed generally to a respirator assembly for the protection of personnel against contaminated or otherwise irrespirable environments. It has particular application for use by aircrew or other military personnel who may be exposed to the risk of nuclear, biological or chemical (NBC) attack, but may be found to be of more general application wherever breathing apparatus must be used, e.g. in firefighting or for industrial use where work must be performed in hazardous environments.

The claimed invention is directed more precisely to a respirator assembly including two sub-assemblies – a first sub-assembly (1) and a second sub-assembly (2) – which are discussed in more detail below.

A. The First Sub-Assembly

Figure 3, which depicts one embodiment of a fist sub-assembly of this invention, is reproduced below.

Fig.3.



The claimed first sub-assembly (1) is adapted to be worn on the head and includes a seal (6) adapted to seal against the periphery of the user's face when worn. (See Figures 1 and 3; Claim 1;

e.g., page 3, line 32 to page 4, line 4). In the embodiment shown in Figure 3, the first sub-assembly (1) is adapted to be worn on the user's head by virtue of its forming a flexible head covering (3) which extends downwards over the shoulders of the user. (See, e.g., page 3, lines 32-33).

The claimed first-sub assembly further includes a "seal adapted to seal against the periphery of the user's face when worn". This seal corresponds to feature (6) of the figures and is described in the specification variously as a "seal" or "gasket" or "sealing means" in great detail as follows:

- A first sub-assembly adapted to be worn on the head and including sealing means adapted to form a seal around the periphery of the user's face when worn. (Page 2, lines 12-14).
- In a preferred embodiment the first sub-assembly comprises headgear including a substantially rigid ring structure adapted to be juxtaposed to the user's face when the headgear is donned and from which said sealing means extend to engage around the periphery of the user's face. . . . (Page 3, lines 1-4).
- In operation the user can don the sub-assembly 1 as shown in Figures 1 and 3, prior to a mission, and take the time to ensure that the gasket 6 is properly and comfortably sealed against his face before there is any risk of exposure to the hazard. (Page 4, lines 6-9).
- In the fully assembled condition of the respirator shown in Figure 4 a facial cavity 13 is formed, bounded by the face plate 7 and gasket 6, in which the user's nose, mouth and eyes are isolated from the external environment. The integrity of the peripheral face seal formed by the gasket 6 is crucial in this respect, and can be ensured by the careful donning of the sub-assembly 1 prior to a mission. (Page 4, lines 24-28).
- At the same time, by making the gasket 6 part of the sub-assembly 1 which can be donned at leisure, the integrity of the face seal can be more reliably ensured than in those assemblies where a face seal is applied only when a threat is encountered and likely in haste. (Page 5, lines 13-17).

In all instances above, the seal or gasket or sealing means are (a) described with reference to the first sub-assembly; and (b) described as forming a seal around the user's face.

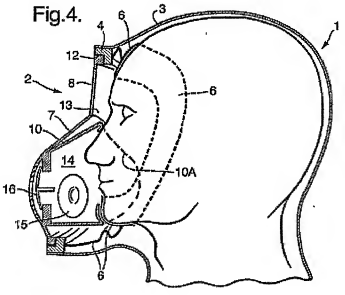
The first sub-assembly may include additional optional features. One optional feature is a

substantially rigid ring structure that is juxtaposed to the user's face when the device is worn and from which the seal extends. (See claim 3; page 3, lines 32 to page 4, line 4). In Figures 1 & 3, the ring is substantially rigid profiled ring (4) which is associated with the seal or gasket (6). (Page 3, lines 33-34).

In another optional embodiment, the first sub-assembly may be a headgear in the form of a flexible hood of air-permeable material. (Claim 5; Page 5, lines 4-8). In particular, the headgear may be selected from a material such as microporous charcoal-impregnated cloth that allows evaporative cooling of the wearer's head while being resistant to inward penetration by hostile airborne droplets and vapors. *Id.*

B. The Second Sub-Assembly

Figure 4, which depicts one embodiment of second sub-assembly (2) associated with first sub-assembly (1) is reproduced below.



Second sub-assembly (2) includes a face piece (7) having a lens (8) and a fitted air supply hose (9). Internally, second sub-assembly (2) carries an oronasal mask (10) with a soft sealing edge (10A) to engage around the mouth and nose of the user when donned. (See, e.g., page 4, lines 13-22). The second sub-assembly further includes an air inlet (e.g., one way inlet valve 15) connectable to a source of breathing gas and an outlet (e.g., one way outlet valve 16) for the user's exhaled gases. (Claim 1, See. e.g., page 4, lines 34-37).

The second sub-assembly (2) is demountably attachable to first sub-assembly (1). (Page 4, lines 16-19). Demountable attachment is accomplished for example using lugs (not shown) on face plate (7) that engage sockets (11) formed in ring (4). *Id.* A manually releasable latch (11A) may optionally be used to facilitate the demountable attachment. *Id.*

In another embodiment, the second sub-assembly (2) can be articulated to first sub-assembly (1) for example by using a hinge. (Claim 4; page 2, lines 32-35).

In still another embodiment, the second sub-assembly may include an oronasal mask that is disposed within the facial cavity formed by the combination of sub-assemblies. (Claim 6; See, e.g., page 4, lines 13-16). An oronasal mask (10) is shown in Figure 4 and includes a soft sealing edge (10A) to engage around the mouth and nose of the user when donned. *Id.*

In still another embodiment, lens (8) may be provided as a separate unit which can be sealingly attached to the face plate (7) or removed from it if required. (Claim 7; page 5, lines 19-20).

C. Relationships Between The First And Second Sub-Assemblies

When fully assembled, the respirator forms a facial cavity (13) bounded by the face plate (7) and gasket (6), in which the user's nose, mouth and eyes are isolated from the external environment. (See, e.g., page 4, lines 24-32). The integrity of the peripheral face seal formed by the gasket (6) is crucial and can be ensured by carefully donning sub-assembly (1) prior to a mission. The second sub-assembly (2) can then be donned quickly when required to complete the respirator without compromising the integrity of the face seal. *Id.* Within facial cavity (13) a smaller subdivision (14) is formed by the interior of the oronasal mask bounded by the sealing edge (10A), but the integrity of the latter is of secondary importance to the integrity of the seal formed by gasket (6). (Page 4, lines 30-32).

VI. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

The grounds of objection/rejection to be reviewed on appeal are twofold.

The first grounds for objection to be reviewed on appeal is whether the specification provides antecedent basis for the claim term "seal adapted to seal against the periphery of the user's face when worn".

The second grounds for rejection to be reviewed on appeal is whether claims 1-7 are

obvious over Quilter et al. (Quilter) (USP 2,861,568) in view of Tischer et al. (USP 6,328,031).

VII. APPLICANT'S ARGUMENTS IN FAVOR OF CLAIM PATENTABILITY

A. The Prior Art

1. Quilter U.S. Patent No. 2,861,586

Quilter U.S. Patent No. 2,861,586 generally discloses pressurized helmets for aviators including air crews and passengers. The helmets allow the air crews to breathe a supply of oxygen under pressure when the aircraft reaches high altitudes. The Quilter helmets include three primary elements. The first element is a skin or liner (11) made of a flexible material. (Column 2, lines 19-24). The skin is designed to fit snugly in contact with the wear's head. *Id.* The skin (11) includes edges (13) that are sealed to the wear's face by making light contact. (Column 2, lines 26-28).

The next helmet element is outer skin or cover (15) that is made of a flexible and gas proof material such as a sheet of rubber or plastic. (Column 2, lines 32-36). The skin (11) and cover (15) are cut away at the top such that their adjacent edges (15a) and (11a) are joined together in a gas tight manner. (Column 2, lines 46-48).

The Quilter helmet further includes a frontal mask (25) that is preferably moulded of a rubber or plastic material and that includes an inserted window (26). (Column 2, lines 57-59). The edges (25a) of the frontal mask are joined to cover (15) such that cover (15) is integral with the frontal mask. (Column 2, lines 59-67). Cover (15) is joined to mask (25) by, for example vulcanization. *Id.* Edges (25a) of the frontal mask are also attached to the exterior of liner (11). (Column 2, lines 67-71).

It is important in Quilter that liner (11) and cover (15) form a space (17) divided into two compartments through which the oxygen supply is passed in series to allow for the sweeping out of any accumulated carbon dioxide towards the exit valve. (Column 3, lines 55-67).

2. Tischer et al. U.S. Patent No. 6,328,031

Tischer U.S. Patent No. 6,328,031 discloses a face mask that is removably attachable to a fire fighting hood. The mask is usable in association with a self contained breathing assembly or respirator. (See Abstract). With reference to Tischer et al. Figure 13, there is disclosed a face mask assembly (110) having a face mask (112) and a fire fighting hood (113) which is detachably

connected to face mask (112). Openings between the face mask (112) and hood (113) are prevented. (Column 6, lines 10-17). Face mask (112) further includes a rim (121) extending around the perimeter of face mask (112). The purpose of rim (121) is to provide a location – inner side (122c) - at which a seal member (123) may be attached to face mask (112). (Column 6, lines 26-32).

B. Summary Of The Examiner's Rejections

1. The Lack Of Antecedent Basis Rejection

The examiner has objected to the specification for failing to provide antecedent basis for the claim feature "a seal adapted to seal against the periphery of the user's face when worn". The examiner further takes the position that the claimed "seal" is, according to the specification, seal (12) shown in Figure 4.

2. The Obviousness Rejection of Claims 1-7

The examiner rejected claims 1-7 for being obvious over Quilter in view of Tischer et al. Regarding independent claim 1, the examiner alleges that the Quilter discloses a respirator assembly comprising: a first sub-assembly (15) adapted to be worn on the head (see fig.2) and including a seal (13) adapted to seal against the periphery of the user's face when worn. (Citing Quilter col.2, lines 26-36). The examiner further maintains that Quilter discloses a second sub-assembly (Fig. 9, 26, 64) but does not disclose a second sub-assembly that is separable from the first sub-assembly.

The examiner relies upon Tischer et al. for supplying the teachings missing from claim 1. In particular, the examiner maintains that Tischer et al. discloses a protective head gear having a first subassembly (fig.13, 113) and a second subassembly (fig.13, 112) that are detachably connected to each other. (Citing Tischer et al. at col.6, lines 10-18).

The examiner justifies the combination of Quilter with Tischer et al. on the basis that it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Quilter in order to make the subassemblies separable for the purposes of preventing direct exposure of wearer's head to high heat environment as taught by Tischer (see col. 2, lines 35-40).

C. Errors in the Examiner's Final Rejections

1. The Specification includes ample antecedent basis for the term "seal adapted to seal against the periphery of the user's face when worn"

The examiner objected to the application specification because it does not include antecedent basis for the claims term "seal adapted to seal against the periphery of the user's face when worn". The examiner cites to 37 CFR 1.75(d)(1) and MPEP §608.01(o) in support of this objection.

37 CFR 1.75(d)(1) requires "the terms and phrases used the in the claims must find clear support or antecedent basis in the description so that the meaning of the terms in the claims may be ascertainable by reference to the description.". The examiner's rejection is traversed (1) because the examiner mistakenly believes that seal (12) is the claimed seal; and (2) because the specification includes "clear support" – as required by 37 CFR 1.75(d)(1) - for the claimed feature.

a. what is claimed is seal (6) and not seal (12)

The examiner's objection to the specification for lacking antecedent basis for the term "seal adapted to be worn around the users head" is based upon the apparent misunderstanding that what is being described is seal (12). In particular, the examiner maintains that the "seal' claimed in claim 1 is seal (12) shown in figure 4 and the examiner cites the specification at page 4, lines 19-22 which discloses that "The periphery of the face plate 7 is profiled to match the contour of the ring 4 and carries a seal 12 (Figure 4) to ensure a gas-tight connection between those elements when attached.". (See December 17, 2008 Final Rejection at ¶2).

The examiner's position that the claimed seal refers to seal (12) is wrong. The seal being claimed is seal 6 as shown in Section VII(C)(1)(b) below. What is actually being described in the paragraph cited by the examiner is the respirator assembly face plate and not the first sub-assembly. This is abundantly clear from the first sentence of the paragraph which reads "With reference to Figures 2 and 4, the sub-assembly 2 comprises a moulded face plate 7 with insert lens 8 and fitted air supply hose 9". (See page 4, lines 13-14). Moreover, the face plate, like the first sub-assembly, is described in a preferred embodiment as fitting around the user's face. The examiner's objection must be dismissed, therefore, because it is based upon a misunderstanding of the invention.

b. the specification includes ample support for seal (6)

Assuming that the examiner's objection has merit despite being bases upon a misinterpretation of the specification and claims, then the objection should still be withdrawn because the specification includes ample support for the claimed "seal". The Applicant acknowledges that the specification does not use the precise word "seal" in reference to the first sub-assembly feature "seal adapted to seal against the periphery of the users face". However, the specification includes at least the following excerpts that discuss the claimed "seal" feature in a manner that makes the term ascertainable as required by 37 CFR 1.75(d)(1):

- A first sub-assembly adapted to be worn on the head and including sealing means adapted to form a seal around the periphery of the user's face when worn . . (Page 2, lines 12-14).
- In a preferred embodiment the first sub-assembly comprises headgear including a substantially rigid ring structure adapted to be juxtaposed to the user's face when the headgear is donned and from which said sealing means extend to engage around the periphery of the user's face. . . . (Page 3, lines 1-4).
- In operation the user can don the sub-assembly 1 as shown in Figures 1 and 3, prior to a mission, and take the time to ensure that the gasket 6 is properly and comfortably sealed against his face before there is any risk of exposure to the hazard. (Page 4, lines 6-9).
- In the fully assembled condition of the respirator shown in Figure 4 a facial cavity 13 is formed, bounded by the face plate 7 and gasket 6, in which the user's nose, mouth and eyes are isolated from the external environment. The integrity of the peripheral face seal formed by the gasket 6 is crucial in this respect, and can be ensured by the careful donning of the sub-assembly 1 prior to a mission. (Page 4, lines 24-28).
- At the same time, by making the gasket 6 part of the sub-assembly 1 which can be donned at leisure, the integrity of the face seal can be more reliably ensured than in those assemblies where a face seal is applied only when a threat is encountered and likely in haste. (Page 5, lines 13-17).

It is clear from a reading of the specification and Figures as a whole that claimed first sub-assembly seal adapted to seal against the periphery of the user's face is the same as the sealing means and gasket 6 discussed in the specification. The examiner's specification objection is, therefore, unfounded because the specification includes "clear support" that makes

the claim term ascertainable.

2. The Obviousness Rejection Traverse

The examiner finally rejected all pending claims 1-7 for obviousness. The examiner's rejection cannot be sustained as the examiner has failed to establish a prima facie of obviousness case at least because (1) the examiner's stated motivation for combining the references is irrational; and (2) the references teach away from the claimed invention. In addition, claim 5 is non-obvious because its features are not disclosed or suggested by the cited prior art.

a. The stated motivation for combining references is flawed

The obviousness rejection of claims 1-7 is without merit because the examiner's grounds for combining the various elements of the prior art reference is based upon a misinterpretation of the cited Tischer et al. teaching. According to MPEP §§ 2142 and 2143, it is the Examiner's burden to establish a *prima facie* case of obviousness by clearly articulating reasons with rational factual underpinnings to support the conclusion of obviousness. The examiner has failed to establish a prima facie case of obviousness at least because the cited motivation for combining the references is irrational.

The examiner cites to column 2, lines 35-40 of Tischer et al. for suggesting a reason (and the only reason cited by the examiner) why one of ordinary skill in the art at the time of the invention would have combined the teachings of Quilter and Tischer et al. to reach the claimed invention, i.e., to make the subassemblies separable for the purposes of preventing direct exposure of the wearer's head to high heat environment "as taught by Tischer". However, the cited portion of Tischer et al. suggests no such thing. Instead, what the cited passage of Tischer et al. actually says is:

> "The hood is detachably connected [to the] face mask so as to secure the annular edge of the hood in the annular recess of the face mask and thereby prevent direct exposure of the individual's head to the high heat environment associated with a firefighting site."

In other words the cited portion of Tischer et al. is a teaching that when the (detachable) hood and face mask are connected, the joint which is made between them (by the annular edge of the hood and the annular recess of the face mask) must be such as to prevent direct exposure of the individual's head to the high heat environment (i.e. must leave no gaps through which the heat from outside may pass). The cited portion of Tischer et al. is not a teaching or suggestion – as the examiner believes - for making the sub-assemblies separable. It is instead a teaching that in

use to protect the firefighter there must be a sealed connection between the sub-assemblies to exclude the hot environment. In Quilter the respective parts are already permanently sealed together during manufacture e.g. by vulcanisation (column 2, lines 63-67 of Quilter et al). So the cited teaching of Tischer et al. would suggest that the Quilter et al. helmet should not be modified at all because it is already sealed. The examiner's obviousness rejection cannot be sustained for this reason and claims 1-7 must be allowed.

b. The cited references teach away from their combination

Claims 1-7 are also non-obvious and patentable because one of ordinary skill in the art would not have combined the references as the examiner has. Indeed, the references teach away from their combination. The examiner takes the position that Quilter discloses a first sub-assembly (the outer skin or cover 15) and a second sub-assembly (the window 26 and mouthpiece or breathing mask 64, which are both comprised in the frontal mask 25). The examiner does not identify why these particular elements of the overall helmet structure are to be regarded as individual sub-assemblies although this is assumed to be based on column 2, lines 64-67 of the reference where it is stated that "the molded mask 25 and the sheet-rubber cover 15 may be formed separately and joined together by vulcanization or otherwise, as the judgment of the manufacturer may dictate".

The Examiner correctly recognizes that Quilter fails to disclose that the mask 25 is separable from but selectively co-operable with the cover 15 as required for the two sub-assemblies in claim 1 of the application. It is also correct that Tischer discloses a structure in which a hood and face mask are detachably connected to each other. It does not however follow, as alleged by the Examiner, that it would be obvious to one of ordinary skill in the art to modify the helmet of Quilter to make the two identified subassemblies separable and selectively co-operable as claimed.

In this respect one of ordinary skill in the art would not combine the references in the manner suggested, or at all to reach the claimed invention. Indeed, the purposes of the Tischer and Quilter devices are quite different. It is an aim of Tischer to provide a fire fighting hood and face mask assembly which simplifies and speeds the donning of the hood and mask and which reduces the risk of injury to the firefighter while permitting the hood to be quickly and easily detached from the face mask to facilitate cleaning and/or replacement of the hood (Tischer et al

column 2, lines 6-12). However a high heat environment is not a concern at all of Quilter. Instead Quilter seeks to provide an improved oxygen-fed pressurized helmet for aviators at high altitudes, which is constructed mainly of flexible material but dispenses with a compensatory or "pressure-drop" valve, and prevents the accumulation of carbon dioxide in the interior of the helmet (Quilter et al column 1, lines 53-61). It is not the intention of Quilter that the helmet should ever be worn without the frontal mask 25, and indeed while Quilter discloses that the mask 25 and cover 15 may be formed separately, the reference explicitly requires the components to be permanently joined, as by vulcanization. It would therefore be entirely contrary to the teaching of Quilter to modify the structure to make these components separable.

Moreover it would not logically follow from Quilter to modify the structure in any way due to high heat environment concerns. Indeed, one skilled in the art at the time of the invention would understand that the best way for a wearer of the Quilter device to prevent exposure of one's head to a high heat environment would be to keep the entire Quilter device on. Hence claims 1-7 are not obvious and are patentable because it would have been illogical for a skilled person at the time of the invention to combine the references as the examiner has to make Quilter a two separable sub-assembly device.

3. Claim 5 is independently patentable

Claim 5 is independently patentable because the prior art does not disclose a respirator assembly where "the first sub-assembly comprises headgear in the form of a flexible hood of air-permeable material". The examiner has mistakenly asserted that Quilter discloses the claimed feature and in particular Quilter's disclosure of "other fabric" at column 2, line 36 of Quilter. However, the examiner has not shown that Quilter discloses a first sub-assembly that includes the claimed "air permeable" material. That is because Quilter discloses that both skin (11) and cover (15) are made respectively of "flexible material substantially impervious to oxygen" and "flexible and gas-proof material" respectively. (See Quilter at col. 2, lines 19-20 & lines 33-34). In other words, the Quilter first sub-assembly is gas impervious and not air permeable as claimed. The examiner's rejection of claim 5 cannot be sustained on at least this ground.

CONCLUSION

The examiner's objection to the specification for lacking antecedent basis for a claim feature should not be sustained because, as shown above, the term finds "clear support" in the specification that makes the claim term ascertainable. The examiner's rejection of claims 1-7 for obviousness cannot be sustained because the rejection is based upon a motivation to combine the references that both is faulty and that does not logically follow from the references. Finally, the examiner's rejection of claim 5 cannot be sustained because the claim feature is not found in the cited prior art.

Date: September 8, 2009

By /A. Blair Hughes/_____
A. Blair Hughes
Reg. No. 32,901
312-913-2123

CLAIMS APPENDIX

1. A respirator assembly comprising: a first sub-assembly adapted to be worn on the head and including a seal adapted to seal against the periphery of the user's face when worn; and a second sub-assembly separable from the first sub-assembly but selectively co-operable therewith, the second sub-assembly comprising a face piece adapted to co-operate with the first sub-assembly to define therewith a facial cavity bounded by said seal, an inlet connectable to a source of breathing gas for supply to the user and an outlet for the exhaustion of exhaled gas from the user.

2. A respirator assembly according to claim 1 wherein the first and second sub-assemblies are completely separable whereby the first sub-assembly can be worn alone, the second sub-assembly being demountably attachable to the first sub-assembly.

3. A respirator assembly according to claim 2 wherein the first sub-assembly comprises headgear including a substantially rigid ring structure adapted to be juxtaposed to the user's face when the headgear is donned and from which said seal extends to engage around the periphery of the user's face, the second sub-assembly being configured to be mounted to said ring structure and secured thereto by at least one releasable fastener.

4. A respirator assembly according to claim 1 wherein the second sub-assembly is articulated to the first sub-assembly.

5. A respirator assembly according to claim 1 wherein the first sub-assembly comprises headgear in the form of a flexible hood of air-permeable material.

6. A respirator assembly according to claim 1 wherein the second sub-assembly includes an oronasal mask to be disposed within said facial cavity.

7. A respirator assembly according to claim 1 wherein said face piece includes a demountable lens portion.

EVIDENCE APPENDIX

(None)

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RELATED PROCEEDINGS APPENDIX

(None)